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FINAL

Potable Water System Microscopic Particulate Analysis

North Fork Administration Site

Salmon-Challis National Forest

Walsh Project Number: 6137-010

06/13/2005

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FINAL
Potable Water System Microscopic Particulate Analysis

North Fork Administration Site
Salmon-Challis National Forest

06/13/2005

Prepared For: USDA Forest Service Region 4

Prepared By: Z. Ross
Zane Ross

A. Walsh
Anne Walsh

Reviewed By: Allison D Haines
Allison Haines

Submitted by

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WALSH Project Number: 6137-010

MICROSCOPIC PARTICULATE ANALYSIS OF A DRINKING WATER SYSTEM

Water System Name: North Fork Administration Site

District: North Fork Forest: Salmon-Challis

Drinking Water System I.D. Number: 0001.000019

Date of MPA: 06/13/05

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B. System Description
C. Groundwater Under the Direct Influence of Surface Water (GWUDI) Evaluation.
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A. Site Identification

1. District:	North Fork
2. Water System Name:	North Fork Administration Site
3. Forest:	Salmon-Challis
4. Water System I.D. Number:	0001.000019
5: Date of MPA:	06/13/05
6. MPA Performed By:	Zane Ross
	Anne Walsh
7. Date of this Report:	06/13/2005
8. Report Reviewed By:	Allison Haines

Reviewed By: _____

District Ranger Date

Reviewed By: _____

Recreation Staff Date

Reviewed By: _____

Forest Engineer Date

B. System Description

The North Fork Administration site is a Forest Service administration site supplied by a transient, non-public (TNP) water system consisting of a spring, spring collection box, chlorination unit, one 10,000-gallon storage tank, one 1-gallon hydropneumatic tank, and approximately 15 points of use. North Fork Administration site is located approximately 1 mile west of North Fork, Idaho just off Forest Road 030.

The spring is located approximately 600 feet northeast of the site entrance. The spring is located in a gulch approximately 110 feet northwest of the spring collection box. The spring collection box is a below ground tank of unknown volume located inside a pumphouse. The collection box is located at the bottom of a gulch where surface runoff and drainage pools. A beaver dam was present at the time of sampling approximately 30 feet east of the spring collection box. The dam was blocking the flow of water so that it pools around the pumphouse. The water system manager informed the samplers that the overflow pipe for the spring collection box was submerged underwater and may be allowing standing water surrounding the pumphouse to leak into the collection box.

A supply pump is installed in the collection box and is operated through a pitless adapter. The spring box has a low and high level alarm; however, the water system manager stated that the low level alarm has not been working properly in recent weeks. Upon leaving the spring box, water is pumped to a 1-gallon hydropneumatic tank and then chlorinated with an electric chlorinator. After chlorination, the water is conveyed from the spring box to a storage tank located up gradient from the site on a hill approximately 1,000 feet southwest of the spring. Electricity for the pump and chlorinator is supplied by a local municipality.

A PulsafeederTM chlorination unit connected to the water system between the spring box and hydropneumatic tank treats the water. The chlorination system is located in the pump house and appears to be operating correctly. There have been no problems reported with the system.

The storage system consists of one 10,000 gallon, below ground concrete tank located approximately 1,000 feet southwest of the spring. The water is then transferred to two houses, two outdoor hydrants and administration station.

The distribution system consists of approximately 3,000 feet of piping of unknown material and unknown diameter. Two drains were identified in the system, one located at the storage tank and one at the spring collection box.

The system serves two residences, an office, and a fire hydrant. It is estimated that there are 17 points of use on the system. The points of use in the pumphouse are threaded and anti-siphon devices should be installed if a hose is attached. There is adequate pressure at each of the hydrants.

Potential sources of contamination to the system include the stream which is backed up into the spring box and pumphouse areas, a drainage culvert and animal grazing in a field located approximately 100 feet west and up gradient from the spring collection area.

No use records, previous microscopic particulate analysis (MPA), chemical, physical, or nitrate/nitrite analysis test results are available for this system.

C. Groundwater Under the Direct Influence of Surface Water (GWUDI) Evaluation

An Environmental Protection Agency (EPA) Region VIII approved assessment of Groundwater Under the Direct Influence of Surface Water (GWUDI) was performed at Ansel Watrous Campground. The assessment was performed to determine the probability of GWUDI. All systems receiving 40 points or more are determined to be probable GWUDI systems, and operators must eliminate the risk factors relating to surface water influence, perform a microscopic particulate analysis (MPA) to determine the extent of surface water influence, or comply with the EPA Surface Water Treatment Rule (SWTR) (54 FR 28486, June 29, 1989). If MPA results indicate the existence of a GWUDI system, the system operators must fully comply with the EPA SWTR. The SWTR includes treatment technique requirements for filtered and unfiltered systems that are intended to protect against the adverse health effects of exposure to Giardia lamblia, viruses, and Legionella, as well as many other pathogenic organisms. Those requirements include (1) requirements for maintenance of a disinfectant residual in the distribution system; (2) removal and/or inactivation of 3 log (99.9%) for Giardia and 4 log (99.99%) for viruses; (3) combined filter effluent turbidity performance standard of 5 NTU as a maximum and 0.5 NTU at the 95th percentile monthly, based on 4-hour monitoring for treatment plants using conventional treatment or direct filtration (with separate standards for other filtration technologies); and (4) watershed protection and other requirements for unfiltered systems.

The water source at North Fork Administration Site received the following GWUDI score as totaled below (and as shown in Section F-2):

Spring...10
Distance between a surface water source and casing or nearest collector lateral is less t feet...10
Surface runoff drains toward intake...15
Poorly constructed well, or spring collection chamber (uncase, or casing not cemented of at least 20 feet below land surface)...15

Total GWUDI Score = 50

D. Potential Sources of Contamination

The following potential sources of contamination were identified at the site:

Potential Source of Contamination	*Distance (ft)*	*Direction*	*Gradient*
Beaver dam with backed up and standing water	5 feet from the	East	Crossgradient
Drainage culvert	100 feet	West	Upgradient
Animal Pasture	100 feet	West	Upgradient

E. Microscpic Particulate Analysis (MPA) Sampling Event

1. MPA Procedure

The following procedure was followed at North Fork Administration Site for MPA sample collection.
This procedure satisfies sampling requirements for the Consensus Method for Determining Groundwater Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA); EPA 910/9-92-029.

•Samplers flushed the spring box for 4 hours.
•Samplers lowered a submersible pump operated by a hand-held generator into the spring box.
•Samplers purged water from the spring box at a rate no greater than one gallon per minute. Note: samplers recorded pH, conductivity, turbidity, and temperature prior to sampling and upon sampling completion (See Section F-3-C).
•Water was diverted to the ground away from both the storage tank and the hydrant after it was passed through the sampling device in a way that minimized surface erosion. Note: surface erosion prevention measures included drainage troughs, plastic sheeting and engineering controls.
•Following sample collection completion, samplers secured the lid of the spring box.
•The sample filter was placed in a plastic zip-loc bag and wrapped in insulation and an ice pack.

2. MPA Laboratory

The sample was delivered to CH Diagnostic and Consulting Services, Inc. in Loveland, Colorado within 24 hours of collection. CH Diagnostic analyzed the sample filter using the method outlined in EPA manual, Consensus Method for Determining Groundwater Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA); EPA 910/9-92-029. Although CH Diagnostics does not participate in any state or federal certification program because there are currently none available, it does participate in the method review process performed as part of method updates for the industry. In addition, CH Diagnostic was actively involved in the method development process that led to the current approved protocol for microscopic particulates, giardia and cryptosporidium analysis.

The laboratory analytical procedures are compliant with industry approved methodologies. The laboratory uses standardized sample slide reading protocols, random Quality Assurance (QA) officer checks on sample results and/or slide readings, and multiple analytical technicians confirm unknowns. Additionally, an experienced WALSH chemist has reviewed all MPA sample results.

3. MPA Discussion and Results

A microscopic particulate analysis is used to classify a groundwater source as GWUDI based on the detection of certain surface water organisms in the groundwater supply. The presence of these organisms is an indication that the supply is influenced by surface water. Another indication of surface water influence on a groundwater source is if the groundwater turbidities or temperatures rise and fall with changes in the surface water conditions. The extent to which a groundwater source is influenced by surface water is dependent upon the depth of the well, the type of underlying aquifer, the distance between the groundwater source and a

surface water source, the well construction, and the drainage control around the wellhead area.

The water source at North Fork Administration Sitewas sampled for microscopic particulates at the request of the USDA Forest Service Region 2. The sample filter was analyzed for waterborne particulates and a relative risk was determined based on the following scale:

- >20 = high risk of direct surface water influence
- 10-19 = moderate risk of direct surface water influence
- <9 = low risk of direct surface water influence

If the initial score of an MPA is low, regulating agencies may still require a second MPA test. Additionally, if the score is medium to low, regulating agencies may require annual MPA testing, dye tests, and comparisons of turbidity, pH, conductivity, and temperature between the groundwater source and the nearby surface water. Regulating agencies may also require water treatment (i.e. disinfection) of a groundwater source even if the MPA score is low to medium. However, if the MPA score is high, regulating agencies will require filtration and treatment/disinfection of the groundwater source within 18 months.

The MPA results for the water source at North Fork Administration Site are summarized in Table E-1. Detailed laboratory results, including specific particulate detects are attached in Section F-3-B.

Table E-1: MPA Results Summary

Sample ID	Sample Date/Time	Volume Purged (gallons)	Sample Information	MPA Score
0001.000019	6/13/2005 3:37:00 PM to 6/14/2005 8:26:00 AM	939.8 Gallons	pH = 7.13 to 7.16 Temp. = 14.2°C to 11.8°C Turb. = 1.16 NTU to 0.0 NTU Cond. = pCi/L to pCi/L	22

°C = degrees Celsius
ft. = feet
pCi/L = picocuries per liter
Cond. = conductivity
ID = identification
MPA = microscopic particulate analysis
NTU = nephelometric turbidity unit
Temp. = temperature
Turb. = turbidity

The MPA score for the water source was determined based on relative risk factors associated with the presence of primary bio-indicators (particulates). Table E-2 summarizes the numerical range of each particulate associated with surface water influence counted per 100 gallons of water, and indicates the significance of the number counted (i.e. extremely heavy, heavy, moderate, rare, or not significant). Table E-3 lists the relative risk factors associated with the number of each particulate counted.

Table E-2: Numerical Range of Each Primary Bio-Indicator Counted Per 100 Gallons Water

Indicators of Surface Water	EH	H	M	R	NS
Giardia	>30	16-30	6-15	1-5	<1
Coccidia	>30	16-30	6-15	1-5	<1
Diatoms	>150	41-149	11-40	1-10	<1
Other Algae	>300	96-299	21-95	1-20	<1
Insects/Larvae	>100	31-99	16-30	1-15	<1
Rotifers	>150	61-149	21-60	1-20	<1
Plant Debris	>200	71-200	26-70	1-25	<1

EH = extremely heavy
H = heavy
M = moderate
R = rare
NS = not significant

Table E-3: Primary Bio-Indicators and Associated Risk Factors

Indicators of Surface Water	Relative Risk Factor				
	EH	H	M	R	NS
Giardia	40	30	25	20	0
Coccidia	35	30	25	20	0
Diatoms	16	13	11	6	0
Other Algae	14	12	9	4	0
Insects/Larvae	9	7	5	3	0
Rotifers	4	3	2	1	0
Plant Debris	3	2	1	0	-

EH = extremely heavy
H = heavy
M = moderate
R = rare
NS = not significant

The MPA results for this water sources are scored as follows:

Particulate detects (see Section F-3-B for laboratory MPA results).

Algae = 32/100 gallons
Diatoms = 13/100 gallons
Plant Debris = 0/100 gallons
Rotifers = 35/100 gallons
Nematodes= 253/100 gallons
Pollen (pine) = 0/100 gallons
Ameba = 11/100 gallons
Ciliates = 0/100 gallons
Colorless Flagellates = 0/100 gallons
Crustaceans = 0/100 gallons
Other Arthropods = 0/100 gallons
Other = Highest value was recorded from results of two MPA.
Amorphous Debris = inorganic precipitate, clay (1-2 micrometers), silt (2-50 micrometers), detrius, aggregates

From Tables E-2 and E-3, the MPA Score for this site is:

22 - High Risk per EPA Consensus Method

F. Attachments

1. System Construction Information

2. Groundwater Under the Direct Influence of Surface Water (GWUDI) Evaluation

3. Microscopic Particulate Analysis Sampling Event
A. Apparatus
B. Results
C. Field Notes and Database Forms

4. Maps and/or Site Plan

5. Photographs

1. System Construction Information

No System Construction Information

was available for this site.

2. Groundwater Under the Direct Influence of Surface Water (GWUDI) Evaluation

Walsh
Environmental Scientists and Engineers, LLC

System CN: 0001.000019

United State Environmental Protection Agency, Region 10
Idaho Operations Office

ASSESSMENT OF GROUND WATER UNDER THE DIRECT INFLUENCE OF SURFACE WATER AND SUBJECT TO THE SURFACE WATER TREATMENT RULE

A. Type of Subsurface Water Source (Check Only One)

- ☐ Well, equal to or greater than 50 feet deep...0
- ☐ Well, less than 50 feet deep or no well log available...5
- ☑ Spring...10
- ☐ Infiltration Gallery...10

B. Historical Microbiological Contamination (Check all that apply)

- ☐ History or suspected outbreak of Giardia or other pathogenic organisms associated with surface water with current system configuration...50
- ☐ Record of total coliform acute MCL violations over last 3 years...30

Record of total coliform monthly MCL violations over last 3 years

- ☐ One month...5
- ☐ Two months...10
- ☐ Three months...20

- ☐ Regulatory agency verifies complaints about turbidity or suspected waterborn disease...10

C. Hydrogeological Features (Check all that apply)

Distance between a surface water source and casing or nearest collector lateral

- ☐ Over 200 feet...0
- ☐ 100-200 feet...5
- ☑ Less than 100 feet...10

- ☐ Intake is located on floodplain at approximate altitude of stream...20
- ☑ Surface runoff drains toward intake...15
- ☐ Exposed aquifer that is coarse alluvial, cavernous, or fractuered is used for water supply...15

D. Water Intake Structure (Check all that apply)

- ☑ Poorly constructed well, or spring collection chamber (uncase, or casing not cemented to depth of at least 20 feet below land surface)...15
- ☐ Poor sanitary seal, or seal without acceptable material...15
- ☐ Intake open to atmosphere...15
- ☐ Leaks of source collector that allow entry of surface water...15

Remarks: The spring collection box is located inside a pumphouse but the pumphouse is surrounded by a beaver dam which has caused pooling of water around the pumphouse. A drainage culvert upstream of the spring and spring collection box drains toward the spring. The spring and spring collection box are located in the bottom of a gulch and surface water drains toward these areas. There were no previous test results available for review at the time of sampling.

An MPA is required for all sites scoring 40 points or more. **Total GWUDI Score = 50**

3. Microscopic Particulate Analysis Sampling Event

A. Apparatus

EQUIPMENT

1. Inlet hose (washing machine hose)
2. Backflow preventor (BP) (not included because air gap at effluent)
3. Pressure regulator (PR)
4. Pressure gauge (PG)
5. Filter housing (H) Fulflo LT10
6. 1 micron nominal porosity filter (F) Parker Hannifan M39R10A
7. Meter (M)
8. Limiting flow orifice (LFO) 3.785 L/min. (1 gal/min)

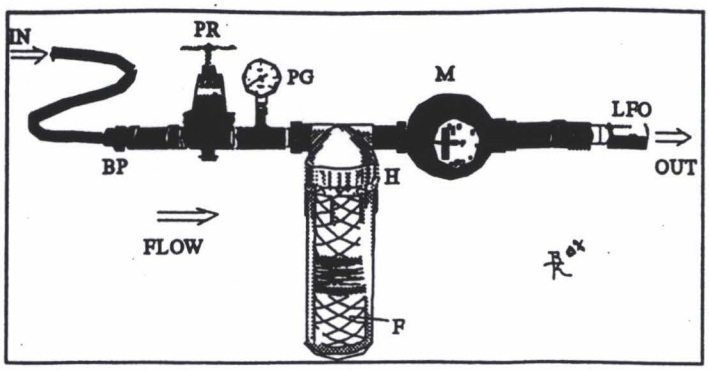
Additional Equipment for chlorinated samples:

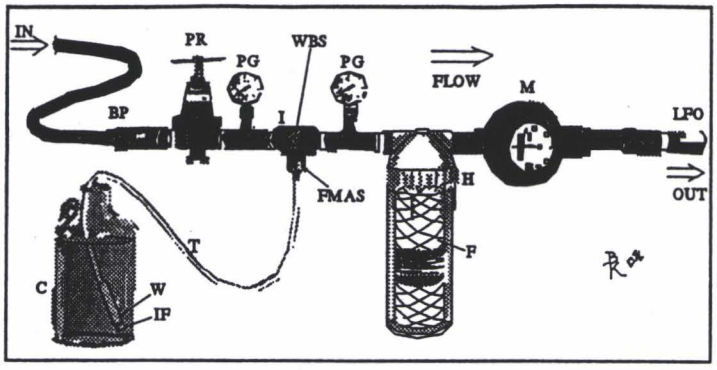
9. Large sanitary container (C) for sodium thiosulfate solution
10. Injector (I) with:
    a. water bypass screw (WBS)
    b. Fine metering adjustment screw (FMAS)
    c. tubing (T)
    d. injector filter (IF)
    e. porcelain weight (W)
11. Second pressure gauge

Equipment on loan from CH Diagnostic is clean and ready to use. Otherwise, clean equipment thoroughly before use.

OTHER SUPPLIES

(1) Turbidimeter (optional); (2) pH meter (optional); (3) Thermometer (optional); (4) Sanitary latex gloves; (5) Heavy duty zip-loc 1 gallon freezer bags; (6) Frozen ice packs and cooler for shipping; (7) For chlorinated water: sodium thiosulfate and distilled water or sample water (see page 2); (8) For non-pressurized source: 2-4 Liter/minute gas or electric pump.





Example of a Meter Reading						
Meter Reading						
0	0	0	2	5	3	0
1,000,000 gallon mark	100,000 gallon mark	10,000 gallon mark	1,000 gallon mark	100 gallon mark	10 gallon mark	This digit remains zero, read the gallons from the red meter hand.
This meter reads 2,530. If the red meter hand is on the 4, then it reads 2,534.						

B. Results

ANALYSIS FOR WATERBORNE PARTICULATES

Invoice 20050463

CH Diagnostic and Consulting Service, Inc.
214 SE 19th Street, Loveland, CO 80537
Brec L. Clay, President/Treasurer; Gregory D. Sturbaum, President/Secretary
(970) 667-9789

Customer 20031455
Walsh Environmental
4888 Pearl E. Circle, Suite 108
Boulder, CO 80301

Laboratory Information
Postal Express; 6/16/2005; 1035 Hrs; 21.0°C; Wound
Results submitted by:

Sample Identification: North Fork Ranger Station, #1, 0001.000019

Sample Information: SOURCE: Spring; 1-5' from surface water; Unchlorinated; pH 7.13 —» pH 7.16; 14.2ºC —» 11.8ºC; 1.16 NTU

Sample Date & Time: 6/13/2005 03:37 PM —» 6/14/2005 08:26 AM **Sampler:** Z. Ross/A. Walsh

Amount: 3557.143 L (939.8 gal) **Filter Color:** Brown **Filter Type:** Polypropylene wound cartridge

Date/Time Eluted: 6/16/2005 02:26 PM **Centrifugate:** 0.00843 mL/100 L

RESULTS OF MICROSCOPIC PARTICULATE ANALYSIS

Amount of sample assayed: 270 L

Amorphous Debris	silt (2-50 µm), clay (1-2 µm), detritus, inorganic precipitate, aggregates
Algae	22/100 Gal; some Chlorophytes, Chlamydomonas, Cosmarium; some Euglenophytes, Phacus
Diatoms	4/100 Gal; some Pennales, Navicula
Plant debris	ND
Rotifers	14/100 Gal
Nematodes	185/100 Gal
Pollen (pine)	ND
Ameba	4/100 Gal, test
Ciliates	ND
Colorless Flagellates	ND
Crustaceans	ND
Other Arthropods	ND
Other	ND

Giardia and Coccidia are none detected (ND) by MPA unless reported under "Other".
This sample was analyzed for particulates following the Environmental Protection Agency Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA): 1992. USEPA, Port Orchard, WA, EPA 910/9-92-029. All limitations stated in the methods apply. If HV capsule or foam filter was received, method was modified by filtering sample through a Pall Envirochek™ HV capsule or IDEXX Filta-Max™ filter at the sample site. If *Giardia* and *Cryptosporidium* Analysis was also performed, particulate extraction was modified.

COMMENTS: Score: 16-Moderate Risk per EPA Consensus Method referenced above.

ANALYSIS FOR WATERBORNE PARTICULATES

Invoice 20050463

CH Diagnostic and Consulting Service, Inc.
214 SE 19th Street, Loveland, CO 80537
Brec L. Clay, President/Treasurer; Gregory D. Sturbaum, President/Secretary
(970) 667-9789

Customer 20031455
Walsh Environmental
4888 Pearl E. Circle, Suite 108
Boulder, CO 80301

Laboratory Information
Postal Express; 6/16/2005; 1035 Hrs; 21.2°C; Wound
Results submitted by:

Brec L Clay Pres./Treas

Sample Identification: North Fork Ranger Station, #2, 0001.000020

Sample Information: SOURCE: Spring; 1-5' from surface water; Unchlorinated; pH 7.11 —» pH 7.16; 13°C —» 10.8°C

Sample Date & Time: 6/13/2005 03:37 PM —» 6/14/2005 08:26 AM **Sampler:** Z. Ross/A. Walsh

Amount: 3595.75 L (950 gal) **Filter Color:** Brown **Filter Type:** Polypropylene wound cartridge

Date/Time Eluted: 6/16/2005 01:35 PM **Centrifugate:** 0.0139 mL/100 L

RESULTS OF MICROSCOPIC PARTICULATE ANALYSIS

Amount of sample assayed: 170 L

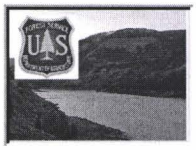
Amorphous Debris	silt (2-50 µm), clay (1-2 µm), detritus, inorganic precipitate, aggregates
Algae	32/100 Gal, some Chlorophytes, Spirogyra
Diatoms	13/100 Gal, some Pennales, Hannaea
Plant debris	ND
Rotifers	35/100 Gal
Nematodes	253/100 Gal
Pollen (pine)	ND
Ameba	11/100 Gal
Ciliates	ND
Colorless Flagellates	ND
Crustaceans	ND
Other Arthropods	ND
Other	ND

Giardia and Coccidia are none detected (ND) by MPA unless reported under "Other".

This sample was analyzed for particulates following the Environmental Protection Agency Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA): 1992. USEPA, Port Orchard, WA. EPA 910/9-92-029. All limitations stated in the methods apply. If HV capsule or foam filter was received, method was modified by filtering sample through a Pall Envirochek™ HV capsule or IDEXX Filta-Max™ filter at the sample site. If *Giardia* and *Cryptosporidium* Analysis was also performed, particulate extraction was modified.

COMMENTS: Score: 22-High Risk per EPA Consensus Method referenced above.

C. Field Notes and Database Forms



Microscopic Particulate Analysis
Field Data
Region - 04

Forest	Salmon-Challis	Code:	04
Water System Name:	North Fork Administration Site		
District:	North Fork		
County:	Lemhi	Date Sampled:	06/13/05

System CN:	0001.000019		
Additional ID #1:		Type:	
Additional ID #2:		Type:	
Real Property Number:			

MPA - Field Data

1. General Site Information
2. Contacts/Escorts
3. Short Survey
4. Well Log Information
5. GPS and Photographs
6. Sample Information
7. Field Notes

MPA-Field Data

System CN: 0001.000019

1. General Information

Type of Site:	Administration	Classification:	transient, non-public (TNP)
Type of system:	spring	Currently in use:	Yes
Year of installation:	Unknown		
Approximate number of people per day using site:	30		
Site opened annually from	Unknown	to	Unknown
Location:	Approximatley 1 mile west of North Fork, Idaho		
Remarks:	None		

System CN: 0001.000019

2. Contacts/Escorts

Forest Service Contact:	Lon Davis		
Title:	Water System Operator		
Was sampling appointment scheduled in advance?	Yes	Method of Scheduling:	Phone
Additional Individuals Present During MPA:	Yes		
Campers / Recreational Individuals Present During MPA	No		
Remarks:	None		

System CN: 0001.000019

MPA - Field Data

3. Short Survey

Spring

Spring Type: Flowing Spring Capacity: 0 gpm ☐ Adequate Fence ☑ Adequate Lid

Spring Improvements: Add a fence surrounding the spring and pumphouse

Well

☐ Casing is 12" above natural grade ☐ Concrete slab is present

Improvements:

Pump

☐ Handpump ☐ Submersible Pump ☑ Supply Pump

☐ Adequate Pump Protection ☑ Adequate Pump Protection

Improvements: Maintenance operator said that the low level alarm was not operating at the time of survey.

Treatment

Disinfection Type: Chlorine ☐ Sedimentation ☐ Filtration

Improvements: At the time of the site visit, there was standing water surrounding the spring box and pumphouse area due to a bever damn. Spring water is at risk of being contaminated by surface water and a filtration system should be installed.

Storage

☑ Hydropneumatic	☑ Below Ground	☐ Above Ground
Number: 1	Number: 1	Number: 0
Capacity: 1 Gallons	Capacity: 10000 Gallons	Capacity: 0 Gallons

Improvements:

System CN: 0001.000019

MPA - Field Data

3. Short Survey Continued

Distribution Line

Material: Unknown

Approximate Length: 3000 Feet

Number of Connections: 17

Number of Drains: 2

Improvements: None

Power Supply

Power Supply Type: Above Ground

Improvements:

Potential Sources of Contamination

Beaver Dam with backed up standing water located approximately 130 feet southeast and down gradient of the spring and also located approximately 5 feet east and cross gradient of the spring box, drainage culvert located approx. 100 feet west and upgradient of the spring, animal pasture located approx. 100 feet west from the spring.

Remarks: None

MPA - Field Data

System CN: 0001.000019

4. Well Log Information

☑ Spring

Well

Well Permit Number:
Driller Name:
Well Log:
Phone:
Year Drilled:
License #:
Section:
Township:
Range:
Type:

Casing Diameter: Material: Wall Thickness: Inches

Depth
Ground surface to bottom of well: Feet
Ground surface to bottom of casing: Feet
Ground surface to first draw: Feet
Screen Interval From: 0 to: 0 Feet Below Ground Surface

Static water level: feet below ground surface
Capacity: (gpm) at feet drawdown:
Type of sanitary seal:

Well Screen Well Screen Material:
Sanitary Cover Type: Vented:
Pitless Adapter:

Remarks:

MPA- Field Data

System CN: 0001.000019

5. GPS and Photographs

GPS

Latitude: 45 Degrees 24 Minutes ☑ N ☐ S Elevation: 3612 Feet

Longitude: 113 Degrees 60 Minutes ☐ E ☑ W Accuracy: 27 Feet

Object / Location Being Mapped: Spring

Type of GPS Equipment: Hand-held Garmin Etrex Venture

Equipment Problems: None

Comments:

Photographs

☑ Photographs Were Taken

Description of Photographs: Photograph of the spring collection box (inside the pumphouse) with backed up beaver dam and standing water surrounding the pumphouse.

Remarks: The water system manager for this site explained that beavers have been damming this area in the past and beavers have had to be removed from the area to prevent the water from pooling and surrounding the spring collection box.

MPA-Field Data

System CN: 0001.000019

6. Sample Information

Primary Sample

Volume Sampled: 939.8 Gallons

Sample Identification Number: 0001.000019

Start Date: 6/13/2005
Start Time: 3:37:00 PM
Stop Date: 6/14/2005
Stop Time: 8:26:00 AM

Analyses
- [x] Analyze by Method Number EPA 910/9-92-029
- [ ] Add Giardia and Cryptosporidium
- [ ] Sampled water was chlorinated

Initial Parameters			Final Parameters		
ph:	7.13		pH:	7.16	
Temperature:	14.2	C	Temperature:	11.8	C
Turbidity:	1.16	NTU	Turbidity:	0.0	NTU
Conductivity:		pCi/L	Conductivity:		pCi/L

Field Duplicate Sample

- [x] Field Duplicate Taken at this site

Volume Sampled: 950 Gallons

Field Duplicate Identification Number: 0001.000020

Start Date: 6/13/2005
Start Time: 3:37:00 PM
Stop Date: 6/14/2005
Stop Time: 8:26:00 AM

Analyses
- [x] Analyze by Method Number EPA 910/9-92-029
- [ ] Add Giardia and Cryptosporidium
- [ ] Sampled water was chlorinated

Initial Parameters			Final Parameters		
pH:	7.11		pH:	7.16	
Temperature:	13	C	Temperature:	10.8	C
Turbidity:	0.0	NTU	Turbidity:	0.0	NTU
Conductivity:		pCi/L	Conductivity:		pCi/L

All Samples

Report Results To: Allison Haines

Method of Sample Delivery: Courier

- [ ] Rush Analyses (Quick Turn-around)

Special Instructions:

Remarks: Two samples were taken at the same time for this campground. Sample #1 is the 'primary' and #2 is the 'duplicate' but each is considered a seperate MPA.

Laboratories

System CN: 0001.000019

Laboratory: CH Diagnostics

Laboratory Address: CH Diagnostics 214 19th Street Loveland, Colorado 80537

Remarks: None

MPA - Field Data

System CN: 0001.000019

7. Field Notes

Field Notes: The water was sampled from the spring collection box. The full 1000 gallons could not be obtained due to slowing of flow through the sampling aparatus.

4. Map and/or Site Plan

SYMBOLS FOR FIELD SKETCHES

SOURCES

⊕ SUB	Indicates a well source with a submersible pump
⊕ HP	Indicates a well source with a handpump
⊕ SPR	Indicates a spring source
⊕ SUR	Indicates a surface source
⊕ MUN	Indicates a municipal source

PUMPS

× SUB	Indicates a submersible pump
× SUP	Indicates a supply pump

TREATMENT

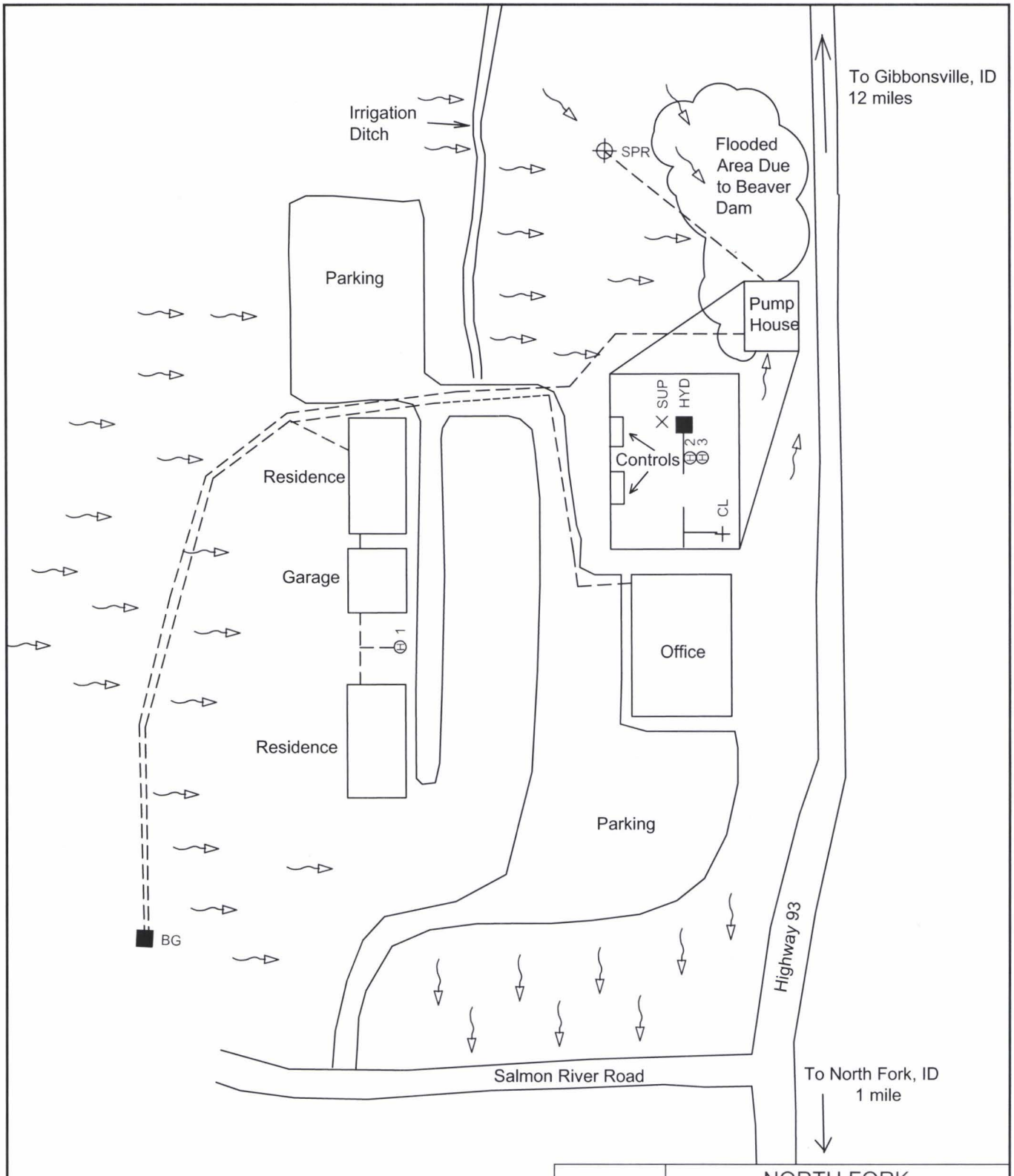
+ CL	Indicates a chlorine treatment system
+ ID	Indicates a iodine treatment system
+ OZ	Indicates an ozone treatment system
+ FIL	Indicates a filtration system

STORAGE

■ HYD	Indicates a hydropneumatic storage tank
■ ELEV	Indicates an elevated storage tank
■ BG	Indicates a below ground storage tank
■ OTHER	Indicates another type of storage tank

DISTRIBUTION AND POINT OF USE

△1	Indicates drain number 1, 2, 3, 4, etc.
Ⓟ1	Indicates point of use number 1, 2, 3, 4, etc.
——	Indicates verified distribution line
-------	Indicates estimated distribution line



NORTH FORK
ADMINISTRATION CENTER

No.	Revisions	Date
#1		
#2		
#3		
#4		

USDA FOREST SERVICE
MPA PROJECT

Walsh
Environmental Scientists and Engineers, LLC

CREATED BY FIELD SKETCH:
NOT TO SCALE

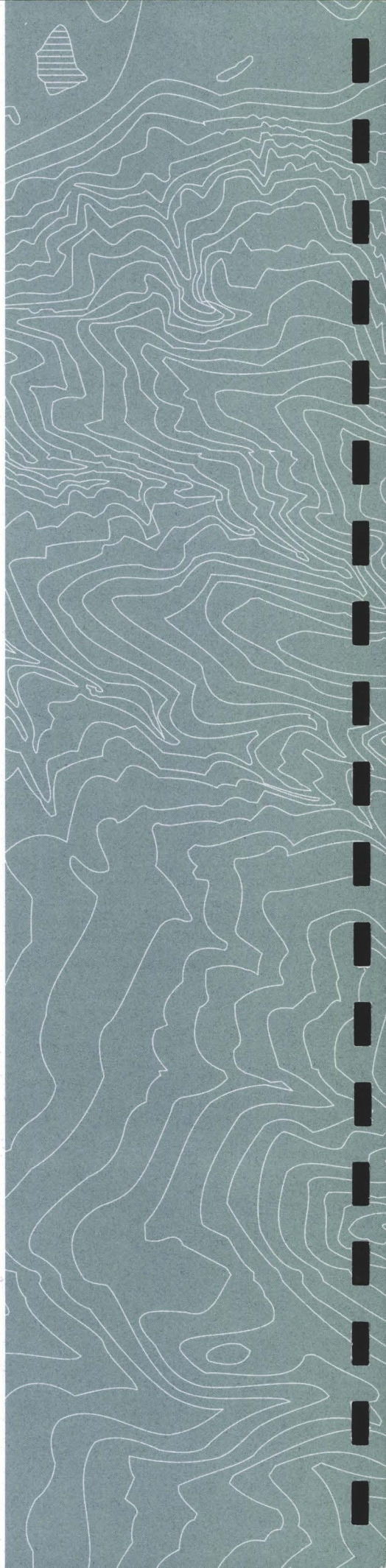
Date: 06/21/2005	Drawn By: Z. ROSS
Project No. 6137-010	Checked By: Allison Haines
Figure:	Sheet of

P: projects\USFS\MPA\Reports\

5. Photographs

Photograph Number 1:

Pumphouse located at the bottom of a gulch approximately 500 feet north of the office. The pumphouse houses the spring box, chlorination system, and pump controls. The pumphouse has standing water surrounding it and the overflow pipe for the spring box is submerged under this standing water. Water is backed up due to a beaver dam located approximately 15 feet behind the pumphouse.
Note: Hoses coming out of pumphouse were used for the MPA and were removed after sampling was finished.



Walsh

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